"IT Decision" Questionnaire Responses
(Environmental Assessment Statement)

PROJECT OVERVIEW

Red River Environmental Products, LLC (RREP), a subsidiary of ADA-ES, Inc. (ADA-ES) is a proposed Greenfield facility that will manufacture activated carbon. The need for activated carbon as a mercury capture sorbent has been established by ADA-ES over the past several years. The plant will be located near a coal mine (mine mouth) and will use coal as the raw material in the manufacture of activated carbon. The proposed site is near the Red River mine in Red River Parish, near the town of Armistead, Louisiana, which is approximately 40 miles southeast of Shreveport.

Recently promulgated Federal ("Clean Air Mercury Rule" or CAMR) and State regulations require coal-fired power plants to reduce their mercury emissions to the atmosphere. Under CAMR, the first phase of mercury emission reductions becomes effective in 2010. Some States have promulgated, while others are seriously considering, more stringent emissions reductions than CAMR. ADA-ES, the foremost mercury control expert in the United States and owner of RREP, has established activated carbon (AC) injection as the leading mercury control technology. The demand for AC is expected to increase significantly in the coming years. Market projections estimate that in 2010, 400 million lb/yr of activated carbon that is not currently available will be required to meet this new market demand. In later years, additional activated carbon supply will be needed. Current suppliers are not in a position to meet this demand. RREP's proposed AC manufacturing facility will provide additional supply of AC that will enable coal-fired power plants to meet the impending mercury reduction regulations.

RREP's AC manufacturing facility is based on a well-established process that is cost-effective, energy efficient, and environmentally sound. The process essentially involves the controlled, high-temperature steam activation of a coal source. The AC product is then cooled and stored for distribution to customers via rail, barge, or truck. Careful use of waste heat energy and proper flue gas emissions control equipment will serve to make the facility environmentally friendly. Excess heat will be used to generate electric power.

Current plans include two production lines, each having an annual AC production capacity of approximately 175 million pounds. The proposed site is adjacent to a coal mine, Red River Mine, which will provide the raw material used to manufacture AC. It should be noted that ownership and operations of RREP's AC manufacturing facility is separate from Red River Mine's operations; neither facility shares ownership in or operations of the other facility. The process also produces a gaseous by-product/waste stream from which waste heat is recovered to generate electricity for on-site use and for sale to the local electrical grid. This beneficial use of the waste heat improves the environmental profile of the proposed AC manufacturing facility.

RREP's proposed AC manufacturing facility is subject to review under the Prevention of Significant Deterioration (PSD) Program. There are two major components of a PSD permit application: the Best Available Control Technology (BACT) analysis, and an air quality impact analysis. BACT for the process emissions will be achieved through the application of advanced pollution control systems as summarized in Table 1.

Table 1. BACT for process emissions

Pollutant	Emissions Control System
Carbon monoxide, Volatile organic compounds	Afterburner and good combustion practices
Nitrogen oxides	Low-NO_x burners, flame tempering (e.g., flue gas recirculation), selective non-catalytic reduction
Sulfur dioxide	Spray dryer absorber
Sulfuric acid	Spray dryer absorber, fabric filter baghouse
Particulate matter	Cyclone, afterburner, spray dryer absorber, fabric filter baghouse
Note: Although not required by regulation at this time, RREP voluntarily will inject AC manufactured at this facility for control of mercury.	

BACT for the material handling operations sources will be achieved through the use of highly efficient dust collectors which will minimize particulate matter emissions.

The proposed facility's flue gas system will be equipped with modern air pollution control devices to reduce emissions to the atmosphere. A low-NO_x afterburner will reduce oxides of nitrogen (NO_x), volatile organic compound (VOC), and carbon monoxide (CO) emissions. Additionally, flame tempering (e.g., flue gas recirculation (FGR)) and selective non-catalytic reduction (SNCR) with aqueous ammonia (19% concentration) as the reagent will be installed to further reduce NO_x emissions. Activated carbon (produced on-site) will be injected into the exhaust stream downstream of the waste heat recovery boiler for mercury removal. A Spray Dryer Absorber (SDA) will be installed to control sulfur dioxide (SO_2) and sulfuric acid (H_2SO_4) emissions. Finally, a baghouse will be used for particulate matter (PM) emissions control.

In addition to controlling emissions associated with the process exhaust gas stream, the proposed design also addresses controlling fugitive PM emissions. All conveyors are fully enclosed, with dust collection/dust suppression systems at all transfer points to control fugitive PM emissions from coal and product handling. All roads on-site are paved.

The design is for minimal or zero wastewater discharge, the bulk of the wastewater will be evaporated in the SDA. Solid waste generated by the plant will consist of calcium sulfate/sulfite produced in the SDA and collected in the baghouse along with the ash from the MHF cyclones. The solid waste will be properly landfilled or used as backfill in the coal mine or other beneficial use, subject to appropriate approvals.

The first production line of the facility will create about 50 new permanent jobs, including skilled operating and maintenance personnel, office staff, and management, and add a new revenue source for the local economy, not only during construction but also throughout the plant's operations. For two production lines, the facility will create about 75 new permanent jobs. During construction, the peak workforce is projected at more than 180 workers, averaging about 100 workers, with construction occurring over an approximately two-year period. During operation, the facility would also purchase local goods and services.

QUESTIONNAIRE RESPONSES

I. Have the potential and real adverse environmental effects of the proposed facility been avoided to the maximum extent possible?

Yes. The potential and real adverse environmental effects of the proposed facility have been avoided to the maximum extent possible. Good engineering design, secondary containment on tanks, and BACT air pollution control technology are examples of ways in which adverse environmental effects are avoided.

A. What are the potential environmental impacts of the permittee's proposed facility?

The potential environmental impacts of the proposed facility include:

- air emissions
- solid waste
- liquid wastes
- small quantities of hazardous waste
- stormwater discharge
- wastewater discharge (with design for minimal or zero discharge)

Each are discussed below under the respective environmental impacts responses.

1. What wastes will be handled?

Air emissions: Air emissions include criteria pollutants and small amounts of hazardous or toxic air pollutants. These emissions will be minimized through the installation and operation of state-of-the-art emissions control systems.

Solid waste and small quantities of hazardous waste: The facility will not permanently store waste or transport waste onto the site. Solid waste and small quantities of hazardous and universal wastes, generated on-site through process operations, plant operations and maintenance, and office support, will be managed.

Nonhazardous solid waste will be generated as a result of by-products from the emissions control system; this waste will include calcium sulfate/sulfite salts, activated carbon, and ash captured by the baghouse. No hazardous waste will be generated as a direct result of the production line operations.

Other miscellaneous solid waste from the facility will consist of such materials as, but not limited to, cardboard boxes, paper, plastic containers, glass, discarded cleaning solutions, used oil, etc. Small quantities of hazardous waste will be generated as a result of miscellaneous support activities for the operation of the production lines, such as laboratory waste and maintenance wastes. Universal waste and hazardous wastes may include fluorescent light bulbs, cathode ray tubes (CRTs) and other computer-related wastes, paint wastes, nickel-cadmium batteries, waste solvents, and lead-acid batteries.

Liquid wastes: The facility will have tanks to store liquids such as ammonia, diesel fuel, and chemicals needed for the process operations. These tanks will have secondary containment systems to prevent adverse environmental effects. In the event that a tank fails and the liquid released into the containment area is unusable because it is contaminated with dirt or water, the

containment area will be suctioned out and the liquid disposed of rather than used in the process.

Stormwater discharge: Stormwater runoff will be managed during construction and operation of the facility, including preparing and following appropriate Stormwater Pollution Prevention Plans (SWPPP).

Wastewater discharge: The design is for minimal to zero wastewater discharge. The bulk of the wastewater is evaporated in the SDA. Small quantities of wastewater will be from equipment, cleaning operations, sanitary waste, and certain cleaning and treatment residues.

a. Classes of chemicals

Air emissions: Air emissions will include criteria pollutants and small quantities of hazardous or toxic air pollutants. The facility is located in an area currently in attainment for all criteria pollutants.

Solid waste and small quantities of hazardous waste: Solid waste and hazardous waste include both Category I (Listed) and Category II (Characteristic) wastes.

Liquid wastes: Storage tanks include diesel fuel, ammonia (19% maximum concentration), a nonhazardous chemical (not categorized as a HAP or TAP) utilized in a product treatment process, and water treatment chemicals.

Stormwater discharge: The facility intends to meet all regulatory requirements for stormwater discharges.

Wastewater discharge: The facility intends to meet all regulatory requirements for wastewater discharges. As previously discussed in the project overview, the facility will be designed for minimal or zero wastewater discharges.

b. Quantities (hazardous and non hazardous)

Air emissions: The summary of the quantities of air emissions is presented below. An air quality permit is applied for, which will place limits on air pollutant emissions.

The AC manufacturing facility is expected to include the following sources of air pollutant emissions:

- By-product/waste gas from two production lines, each consisting of MHFs, controlled by an afterburner with low-NO_x burners and flame tempering, SNCR, AC injection, an SDA, and a baghouse;
- Material handling operations, controlled by dust collectors;
- Truck traffic-generated (haul road) fugitive dust;
- Two small cooling towers, equipped with drift eliminators; and
- One small fire water pump diesel engine (300 hp).

Summaries of projected short-term (lb/hr) and annual (tpy) criteria pollutant emission rates for these sources are presented in the air permit application in Tables 3.1 and 3.2, respectively.

Solid waste and small quantities of hazardous waste: Quantities of non-hazardous waste or solid waste from the emissions control systems are anticipated to be composed of ash (54%), activated carbon for mercury removal (0.5%), and calcium salts and lime inerts (46%). For one production line, quantities are estimated to be approximately 8,780 pounds per hour. Solid wastes will not be permanently stored on-site.

Small quantities of hazardous waste as a result of miscellaneous support activities are expected to qualify the facility as either a Conditionally Exempt Small Quality Generator (less than 100 kilograms per month, or less than 220 pounds per month), or as a Small Quantity Hazardous Waste Generator (100 kilograms to 1,000 kilograms per month, or 220 to 2,204 pounds per month) based on the Resource Conservation Recovery Act (RCRA) criteria. Hazardous waste will not be permanently stored on-site.

Liquid wastes: All chemical tanks are above-ground storage tanks with secondary containment. A 500-gallon capacity tank will hold diesel fuel, two 15,000 gallon tanks will hold ammonia (19% maximum concentration), two 7,500 gallon tanks will hold water treatment chemicals, and four 16,000 gallon tanks will hold a nonhazardous chemical (not categorized as a HAP or TAP) utilized in a product treatment process. In addition tanks will be used for water storage.

Stormwater discharge: The amount of stormwater discharge is expected to be minimal due to the size and design of the facility. An SWPPP will be in place for construction and operations. Stormwater will be routed to on-site ditches and culverts and directed to an on-site detention basin. The volume of the detention basin will include an assumed maximum 24-hour rainfall (50 year flood) of 10 inches. Any discharge will meet the acceptable Federal and State regulatory requirements.

Wastewater discharge: Wastewater discharge will be managed on-site. The facility intends to meet all regulatory requirements for wastewater discharges. As previously discussed in the project overview, the facility will be designed for minimal or zero wastewater discharges.

c. Physical and chemical characteristics

Physical characteristics of waste include color, odor (e.g., none, mild, strong), specific gravity, texture (e.g., smooth, soil like, etc.), turbidity (e.g., clear, cloudy, muddy), viscosity (e.g., low, medium, high). Chemical characteristics of waste include one or a combination of the following four: corrosivity, ignitability, reactivity, and toxicity. The exact characteristics of the various waste streams will be determined and reported as required by Federal and State regulations.

d. Hazardous waste classification (listed, characteristic, etc.)

Wastes can be hazardous if they are either "listed" or "characteristic", or if they are a mixture of a listed hazardous waste and other wastes. Listed wastes are those on the "F", "K", "P" and "U" lists. The four different characteristics are corrosivity, ignitability, reactivity, and toxicity. A mixture containing a non-hazardous solid waste and any amount of a listed hazardous waste is considered a hazardous waste. There also is universal waste, which is not classified as hazardous waste. The exact hazardous waste classifications of the various waste streams will be determined and reported as required by Federal and State regulations.

2. **How will they be handled?**
    a. **Treatment**
    b. **Storage**
    c. **Disposal**

The facility will not transport waste onto the site or permanently store waste. Methods for handling of wastes will be all off-site and will include the following disposal methods, depending on the type of waste generated: landfill, mine fill or beneficial use, municipal landfill/incineration, off-site hazardous materials/waste landfill, and off-site recycling. To the maximum extent possible, waste streams will be minimized or even eliminated through recycling. Handling of wastes will be in accordance with State and Federal requirements.

Air emissions: Air emissions are minimized via application of state-of-the art emissions control systems. These include a low-NO_x afterburner, flame tempering, selective non-catalytic reduction, activated carbon injection (for mercury capture), and a spray-dryer/fabric filter combination. Emissions controlled include volatile organic compounds, carbon monoxide, acid gases, NO_x, SO_2, particulate matter (both filterable and condensable), and mercury. Additional detail regarding control of air emissions is provided in Section 5.0 of the air quality permit application.

Solid and Hazardous Wastes Handling: The various types of solid wastes will be stored separately in small quantities on-site until removed by truck. The majority of solid waste will be generated as a result of the control of air emissions from the exhaust gas. Process solid waste will be disposed of in an approved, nearby landfill or used as backfill in the nearby coal mine (e.g., mine fill), or other beneficial use, subject to appropriate approvals. Other solid waste from general plant activities (e.g., plant refuse, spent oil filters, etc.) will be disposed of at an approved municipal landfill or incinerator. Other non-hazardous wastes, which are considered universal waste (e.g., antifreeze, lead-acid batteries, fluorescent light bulbs, etc.) generated from miscellaneous support activities and plant activities will be transported off-site. Licensed haulers will be contracted to dispose of waste by off-site recycling or municipal landfill/incineration in accordance with Federal and State regulations.

Resource Conservation Recovery Act (RCRA) Subtitle C establishes a Federal program to manage hazardous wastes from cradle to grave. Louisiana follows the Federal hazardous waste regulations. The objective of the Subtitle C program is to ensure that hazardous waste is handled in a manner that protects human health and the environment. To this end, there are Subtitle C regulations for the generation, transportation, and treatment, storage, or disposal of hazardous wastes. Licensed haulers will be contracted with to dispose of waste by landfill in accordance with Federal and State regulations.

Municipal solid waste (MSW) generated at the facility will include office waste, lunch room waste, and other trash (e.g., spent oil filters). These materials are not considered to be potentially hazardous and are not subject to regulation under the RCRA. These wastes will be collected and disposed of off-site by a licensed contractor at an authorized Subtitle D municipal landfill. Normal quantities of waste produced during the construction process will also be disposed of properly at permitted, off-site facilities.

Liquid wastes: In the event that a tank fails and the liquid released into the containment area is unusable because it is contaminated with dirt or water, the containment area will be suctioned out and the liquid disposed of rather than used in the process. Any liquid so released would be stored in drums until it could be trucked offsite to an appropriate disposal location. Efforts will

be made to identify opportunities to recycle any chemical waste generated.

Stormwater Discharge Handling: The LDEQ has established the Louisiana Pollutant Discharge Elimination System (LPDES), which administers National Pollutant Discharge Elimination System (NPDES) permits to construction sites larger than one acre. Accordingly, it is likely that during construction a Construction Storm Water Multi-Sector Permit will be required. The construction contractor will obtain the permit for the construction activity and prepare the required SWPPP.

Once constructed, RREP will be subject to the requirements of the LPDES storm water permitting program, and will develop a SWPPP for the operating facility. Either an Industrial Multi-sector General Storm Permit (MSGP) would be required or an individual LPDES permit would be required. Periodic testing will be based upon grab samples; the monitoring locations are site-specific based upon drainage pathways and the location of exposed materials.

The proposed facility will adhere to all applicable regulatory requirements. -Stormwater will be routed to on-site ditches and culverts and directed to an on-site detention basin. This detention basin will detain storm flows. The use of this basin will also reduce peak stormwater runoff and reduce the flow to a quantity no greater than the predevelopment condition.

Wastewater Discharge Handling: The design is for minimal or zero wastewater discharge. The bulk of the wastewater is evaporated in the SDA. Small quantities of wastewater will result from equipment cleaning operations, sanitary waste, and certain cleaning and treatment residues. The design goal is to maximize the evaporation of wastewater in the emission control spray dryer system and adjust cycles of concentration and blowdown within the cooling water system to obtain zero discharge.

Process wastewater containing trace oils will be segregated from other wastewater and treated in an oily wastewater system located on site. Oil-contaminated wastewater will be collected in an oily wastewater sump and then pumped to an oil/water separator to remove the oil. The process wastewater and cooling tower blowdown will be recycled on-site using the dry scrubber system for SO_x emissions control. The low quality wastewater generated at the site will be evaporated in the SDA.

Sewage will be treated on-site with an engineered septic system. Leachate will be discharged to an on-site leachate system.

3. Sources of waste

There is no off-site generation (e.g., source) of waste. No waste is brought onto the site. The on-site sources of waste are from the process itself, maintenance activities, and miscellaneous support activities. The following highlights the sources of on-site waste.

a. On-site generation (type and percentage of total handled)

100% of the waste is generated on-site. Quantities of waste are discussed in Section I.A.1.b.

Air emissions: Sources of air emissions include the MHF production lines, material handling operations, on-site haul roads, cooling towers, and the fire water pump engine.

Solid waste and small quantities of hazardous waste: The main source of waste will be the

air emission control systems. The main baghouse will yield a nonhazardous solid waste composed of ash, activated carbon for mercury removal, and calcium salts and lime inerts (from the SDA/baghouse system). This will be combined with ash collected in cyclones downstream of the furnaces for disposal.

Municipal solid waste will be generated on-site through normal plant operations and office support. Small quantities of hazardous waste as a result of miscellaneous support activities are expected to qualify under RCRA as either a Conditionally Exempt Small Quality Generator or as a Small Quantity Hazardous Waste Generator.

Liquid waste: Possible generation of liquid waste resulting from a tank failure is described previously. This is a rare event that is managed through secondary containment.

Stormwater discharge: The amount of stormwater discharge is expected to be minimal due to the size and design of the facility. A SWPPP will be in place for construction and operations. Any discharge will be within the acceptable Federal and State regulations.

Wastewater discharge: On-site sources of waste generation will include small quantities of wastewater from equipment, cleaning operations, sanitary waste, and certain cleaning and treatment residues. Wastewater discharge will be managed on-site. The facility intends to meet all regulatory requirements for wastewater discharges. As previously discussed in the project overview, the facility will be designed for minimal or zero wastewater discharge.

b. Off-site generation (type and percentage of total handled)

There is no off-site generation of waste.

4. Where will the wastes be shipped if not handled at this site?

The facility will not transport waste onto the site or permanently store waste. Shipping of wastes related to air and stormwater is not applicable. Solid, hazardous and non-hazardous wastes will be transported off-site via licensed haulers in accordance with State and Federal regulations.

Process solid waste from the main baghouse will be disposed of in an approved landfill or used as backfill in the nearby coal mine (e.g., mine fill), or other beneficial use, subject to appropriate approvals. Other solid waste will be disposed of in an approved landfill or municipal landfill/incineration. Universal waste will be disposed of by off-site recycling or municipal landfill/incineration. Hazardous waste will be disposed of in an approved landfill.

5. What wastes will remain on-site permanently?

None. There will be no wastes that remain on-site permanently.

B. By which of the following potential pathways could releases of hazardous materials from the proposed facility endanger local residents or other living organisms?

The potential pathways for releases are air and water. Soil also may be a pathway as a result of air pollutant deposition. The following presents a discussion regarding each potential pathway and methods to minimize impacts. The facility intends to comply with all applicable regulatory requirements for all media to prevent unauthorized releases to the environment.

1. Air

Air emissions will be generated from the operation of the production lines and from miscellaneous support activities. This includes emissions from the MHFs, material handling systems, cooling towers, on-site haul roads, and fire water pump engine. Under normal operation, including startup/shutdown and upset conditions, these systems result in low emission rates that do not endanger public health or the environment. In the air permit application, Section 5.0 discusses RREP's application of BACT in detail. Section 6.0 presents the results of the air quality modeling; the modeling results show that the project impacts are below the Federal National Ambient Air Quality Standards (NAAQS), which serve as the standards to protect public health.

An accidental air release of ammonia from the on-site storage tanks is a potential risk in the event of tank failure. However, this is minimized by utilizing 19% ammonia solution, which is safer than higher concentrations and thus not subject to a risk management plan (RMP), which would address requirements in the event of a release. The use of 19% ammonia solution, as well as secondary containment, avoids the potential to endanger public health or the environment.

2. Water

There will be water-related discharges resulting from stormwater, cooling tower blowdown, and sanitary wastewater discharges. Although small quantities of cleaning supplies will be maintained at the facility and may generate some wastewater discharge, these materials will be stored in quantities below applicable spill prevention and control thresholds to reduce the likelihood of a significant release to the environment. Stormwater will be carefully managed by use of engineering controls, a detention basin, and safe practices that safeguard against unplanned releases to the environment. These practices will be established in a SWPPP. The engineering controls and practices will be designed to minimize the quantity of stormwater runoff that could potentially contact facility-related materials.

The design is for minimal or zero wastewater discharge. Wastewater will be managed on-site. The bulk of the wastewater is evaporated in the SDA. Small quantities of wastewater will be from equipment, cleaning operations, sanitary waste, and certain cleaning and treatment residues. The design goal is to maximize the evaporation of wastewater in the emission control spray dryer system and adjust cycles of concentration and blowdown within the cooling water system.

Process wastewater containing trace oils will be segregated from other wastewater and treated in an oily wastewater system located on-site. Oil contaminated wastewater will be collected in an oily wastewater sump and then pumped to an oil/water separator to remove the oil. The process wastewater and cooling tower blowdown will be recycled on-site using the SDA for SO_2 and H_2SO_4 emissions control. The low quality wastewater generated at the site will be evaporated in the SDA.

Sewage will be treated on-site with engineered septic system. Leachate will be discharged to a leachate system.

3. Soil

The proposed facility will not adversely affect soils and vegetation in the surrounding area. The facility will be located near an active mining operation. Construction activities will be limited to

property owned by RREP. The proposed facility is designed to minimize the potential for soil contamination. A construction SWPPP will be implemented to control erosion during construction.

Air emissions may result in deposition on soil. Section 7.0 of the air permit application presents a discussion of soils impact analysis.

The above ground diesel tank for the diesel fire pump engine, which is required as an emergency back up to the electric fire pump, will have a foundation design with secondary containment in the event of a spill or leak. Tanks that hold chemicals will also have secondary containment.

4. Food

The proposed facility will not adversely affect food as a result of facility operations. No food crops are grown on-site or adjacent to the site.

Section 7.0 of the air quality permit application presents a discussion of vegetation impact analysis.

C. What is the likelihood or risk potential of such releases?

The likelihood or risk of potential releases that would endanger human health or the environment with respect to air, water or soil will be very low to nonexistent. Trained, experienced personnel will conduct operations and maintenance. Air emissions and required monitoring, recordkeeping, reporting, emissions testing, and work practices will be governed by State and Federal regulations and permit conditions. Air emissions will be controlled using best available control technology (BACT). On-site storage of hazardous materials will be minimal. The proposed facility is designed to minimize the potential for accidental release by implementing secondary containment on tanks, a Spill Prevention Control and Countermeasure (SPCC) Plan and a SWPPP. SPCC Plans address proper handling and transfer of oil which may be used, stored, or handled at the facility. A SWPPP provides measures for proper spill prevention and operational procedures to prevent these materials from contaminating stormwater and will outline best management practices.

D. What are the real adverse environmental impacts of the permittee's proposed facility?

Minimal environmental impact is expected from the proposed project. In fact, the facility should have an overall positive effect on the environment given that the AC produced by the facility will be used by power plants nationwide to reduce mercury emissions to the atmosphere. The following presents a summary of the environmental impacts previously discussed.

Land: The total acreage of the site is approximately 60 acres.

Air emissions: Air emissions will result from the proposed facility. BACT will be used to minimize emissions. Air emissions impacts are discussed in Sections I.A, I.B, and IV.G.

Nonhazardous Solid waste: Solid waste will result from the proposed facility. Solid waste will be properly disposed of in an approved landfill or used as mine fill, or other beneficial use. Solid waste impacts are discussed in Sections I.A and I.B.

Hazardous waste: Minimal hazardous waste will be generated. Hazardous waste will be properly disposed of in an approved landfill. Hazardous waste impacts are discussed in Sections I.A and I.B.

Wastewater: Minimal wastewater will be discharged. The design is for minimal or zero wastewater discharge. Wastewater impacts are discussed in Sections I.A and I.B.

1. Short term effects

a. Land area taken out of system

The production facility will be sited on approximately 60 acres of land, which is currently part of Red River Mine's current mining plan. As part of the required local and state review and approval process, this area of land will be removed from the mining plan and transferred to RREP to be used for RREP's AC manufacturing facility operations.

2. Long term effects

The project will not cause a long-term adverse impact on any environmentally-sensitive area. It is located in the midst of an operating lignite coal mine, on reclaimed, previously-mined land. Thus the activities in the immediate locale are consistent with the industrial use proposed. As discussed in Section I.A.2, potential project impacts will be minimized as a result of engineering design, construction, operations, and maintenance. As previously mentioned, the facility should have an overall positive effect on the environment given that the AC produced by the facility will be used by coal-fired power plants nationwide to reduce mercury emissions to the atmosphere.

II. Does a cost benefit analysis of the environmental impact costs balanced against the social and economic benefits of the proposed facility demonstrate that the latter outweighs the former?

The environmental, social and economic benefits of the proposed facility outweigh the environmental impact costs. On the environmental front, the facility's product is environmentally beneficial in that it is a demonstrated method to reliably reduce mercury from coal-fired power plants in a wide variety of applications.

ADA-ES has been the leader in development and demonstration of activated carbon as a mercury control technology for coal-fired power plants. Regulations on the State and Federal level that will be implemented in 2010-2018 require that coal-fired power plants reduce mercury emissions. This product is key to enabling mercury reductions to happen since the current supply of activated carbon is inadequate to meet the new demand. As the market leader, ADA-ES has been in the unique position to recognize this deficit early and to take the action to propose a state-of-the-art production facility that will meet this demand.

The facility will have the most stringent emission controls of any operating activated carbon production facility. The facility is voluntarily controlling its own mercury emissions using ADA-ES' mercury control technology. Solid waste will be properly landfilled and is non-hazardous. The facility is designed to recover waste heat and generate power, which offsets power production that would be required to support the facility as well as providing excess power to the local power grid. So while some air emissions and solid waste are generated by the facility, these are minimal and outweighed by the environmental benefits of the product.

The economic and social benefits of the facility include about 50 permanent new jobs in a rural parish for the first production line. These are stable, skilled jobs including operating and maintenance personnel, office staff and management. During construction of the first production line, the workforce will average about 100 workers over an approximately two-year period. These 50 new plant jobs are expected to result in about 150 regional jobs in total (including RREP employees).

Permanent employees could generate an average income annually up to $160,000 in State Income Taxes (individual). Temporary/construction employment could generate up to $320,000 per year in individual Income Tax revenues. Off-site employment could generate up to $180,000 in new State Income Tax revenues (e.g., truckers, barge operators, service providers, port facility handlers, etc.). Tax revenue estimates were developed in conjunction with the Coordinating and Development Corporation in Shreveport and are based on one production line. The construction and operation of this manufacturing facility will have a positive effect on local businesses, the local area, and the State of Louisiana from the capital spent on construction costs, capital spent on operating costs, the purchase of raw materials (lignite), the purchase of goods and services, and the sale of excess electric energy from the facility.

A. How was it determined that this facility was needed?

Recently promulgated Federal ("Clean Air Mercury Rule" or CAMR) and State regulations are requiring coal-fired power plants to reduce mercury emissions to the atmosphere. Under CAMR, the first phase of mercury emission reductions becomes effective in 2010. Some States have promulgated, while others are seriously considering, more stringent emission reductions than required under CAMR. ADA-ES, the owner of RREP, has been at the forefront of mercury control technology development and commercialization. The technology with the broadest application for coal-fired power plant mercury control is activated carbon injection. As the market leader, ADA-ES is in a unique position to accurately assess the need for activated carbon, and has taken the lead in developing a new Greenfield facility to provide that carbon to the utility industry. The current US supply of AC, even with some planned known expansions, is inadequate to meet this new market demand. The increase in AC demand is estimated at about 400 million lb/yr in 2010. RREP's proposed facility will enable coal-fired power plants in the US to meet pending mercury regulations.

1. Local or regional survey

The need for the facility was based on the implications of the Federal and State actions requiring reductions in mercury emissions from coal-fired power plants throughout the nation. A facility location adjacent to an active coal mine was part of the site selection criteria; being adjacent to an active coal mine provides for the primary feedstock locally, minimizing the transportation of coal. This has cost, technical, and environmental benefits. This site is located in close proximity to potential customers for the activated carbon produced by the manufacturing facility, and the site has access to multiple means of transporting the finished product to the market place. This site is one of three sites under consideration. (The other two sites are located in North Dakota.)

2. On-site or off-site needs

For on-site needs, a small fraction of the activated carbon produced will be injected into the exhaust stream downstream of the waste heat recovery boiler for mercury removal. The facility will primarily serve an off-site need for activated carbon to control mercury emissions from coal-fired power plants throughout the United States. The first production line is expected to produce

enough activated carbon annually to reduce mercury emissions at over 10% of installed U.S. coal-fired generating capacity.

3. Regional solid waste management benefit

Solid waste will be properly landfilled or used as backfill in the nearby coal mine (e.g., mine fill), or other beneficial use. Other solid waste from general plant activities (e.g., plant refuse, spent oil filters, etc.) will be disposed of at a municipal landfill/incineration, generating hauling fees for disposal companies and tipping fees at the landfill or incinerator.

4. Generic survey of solid waste needs (compatibility with master plan)

Not applicable.

B. What will be the positive economic effects on the local community?

The facility would create jobs and add a new revenue source for the local economy, not only during construction but also throughout the facility's operations. During operation, the facility would also purchase local goods and services, including lignite.

1. How many permanent jobs will be created?

The facility will create about 50 new permanent jobs for one production line. For two production lines, the facility will create about 75 new permanent jobs. During construction, the peak workforce (temporary, full-time) is projected at more than 180 workers, averaging about 100 workers, with construction occurring over an approximately two-year period. The estimates of job creation are based on ADA-ES' knowledge of construction and operations of this type of manufacturing facility.

2. What is the expected annual payroll?

The expected annual payroll is approximately $3.94 million for one production line, and $5.91 million for two production lines.

3. What is the expected economic multiplier from item B2?

The expected economic multiplier is 2.14, based on an estimate from the Coordinating and Development Corporation.

4. What is the expected tax base and who will receive benefits?

Subject to potential tax incentives, which the facility may be eligible for, it will generate sales and property tax revenue for the local community and the state over its useful life. The actual amount of property and sales and use taxes paid by the facility will depend on the nature and extent of any tax incentives provided by state and local governments for this project. Local sales and use taxes paid by this facility will benefit local area schools. As a major source, the facility will generate fees for the LDEQ. Payroll taxes are discussed above.

C. What will be the potential negative economic effects on the local community?

There is no expected potential negative economic impact or effect on the local area – only positive potential. Red River Parish has the 3rd worst socio-economic statistics and

demographics in the State. This includes extremely low per capita income, high out-migration, and a poverty level below the national average. The project in itself will have a positive impact and may complement the attraction of other manufacturing to the area. The jobs created and the spin off impact of those jobs are expected to improve local economics.

1. What are the possible effects on property values?

The possible effects on property values are expected to be minimal. The project site is on reclaimed land and is surrounded by other existing mining operations and activities.

2. Will public costs rise for:

Operation of the facility is expected to have minimal impact on public costs.

a. Police protection

No. Public costs are not expected to rise with respect to police protection, as a result of this facility. Security at the site will at least include fencing around the property.

b. Fire protection

No. Public costs are not expected to rise with respect to fire protection, as a result of this facility. An on-site emergency fire pump system will be installed. Personnel will be trained to maintain, test and operate the facility fire protection systems.

c. Medical facilities

No. Public costs are not expected to rise with respect to medical facilities, as a result of this facility.

d. Schools

No. Public costs are not expected to rise with respect to schools, as a result of this facility.

e. Roads (also see below)

The State of Louisiana has appropriated, through its Capital Outlay budget for 2007, approximately $7.2 million for infrastructure improvements including roads. The State of Louisiana also maintains three separate funds for road maintenance and improvements related to manufacturing and production facilities getting their goods and services to market. Also, the Red River Waterway Commission provides infrastructure financial assistance for waterway related movement of finished goods and raw materials.

Sections II.D.1 and II.D.3 discuss the transportation characteristics and features.

3. Does the prospective site have the potential for precluding economic development of the area by business or industries because of risk associated with establishing such operations adjacent to the proposed facility?

No. The prospective site is not expected to have the potential for precluding economic development of the area by business or industries. Construction and operation of the proposed

facility should not preclude economic development in the region. There is minimal risk to adjacent property owners because of the tightly-controlled levels of the facility emissions and the non-hazardous nature of most of the materials being handled at the facility, and the fact that there will be no disposal of any wastes at the facility. Section I.A.2 discusses how wastes will be handled. Section I.D discusses the potential environmental impacts of the proposed facility.

D. Was transportation a factor in choosing the proposed site?

Yes. Transportation was a factor in choosing the proposed site. The production facility will be located adjacent to an active coal mining operation, which will provide the primary feedstock and minimize the transportation of coal. Because lignite is the primary raw material for making the AC, and it is not economical or technically practical to transport lignite long distances, the proposed facility needed to be sited very close to an operating lignite mine. As stated, the proximity to the active mine will minimize impacts to the environment and impacts by long-distance transportation of raw material (lignite coal). Additionally, the site has nearby access to rail, roadways, and barge transport to distribute the product.

1. What mode(s) of transportation will be used for the site?

The modes of transportation are discussed below.

a. Truck

Truck transport will be the primary mode for bringing lignite and other consumables to the site. Truck transport will be used to deliver product to customers. Truck transport also will be used for licensed haulers of solid and hazardous wastes, as well as delivery of raw materials.

b. Rail

Rail will likely be used for shipping product. The Missouri Pacific (Union Pacific) railroad is located nearby the eastern boundary of the site. This allows shipments of larger quantities of the AC product to the areas of the country where demand is greatest.

c. Barge

Red River is located nearby the facility, approximately 3 miles away. Barge transport may be used to deliver product from the facility to remote customers, particularly to reduce the cost of product transportation.

d. Other

There are no other modes of transportation that will be used for site activities.

2. What geographical area will it serve?

The product from the proposed facility will serve users throughout the entire United States.

3. By how much will local road traffic volume increase?

Materials transported by truck at the site include coal/mine, ash, lime, product, and treatment chemicals. Coal/mine truck transport will have minimal impact on local road traffic; truck transport will be confined between the coal mine and production facility and could occur up to 7

days per week. On an annual basis for two production lines, the estimated maximum annual truck transport days are estimated as follows: 260 each for ash and for lime; 312 for AC product; 312 for treatment chemicals; and 104 for aqueous ammonia. (One production line would be estimated at one-half the annual truck transport days noted here.)

a. Can local roads handle the traffic volume expected?

Yes, it is expected that the local roads can handle the traffic volume expected.

b. Can local roads handle the weight of trucks?

Yes. Local roads can handle the weight of trucks from the facility. The weight of the trucks will not be any heavier than the over the road trucks currently hauling lignite from the local mine.

4. What are the long-term expectation of the proposed site?

a. Longevity of the facility

The planned life and longevity of the facility is a 30-year life.

b. Who owns the facility

The facility will be owned by RREP, a subsidiary of ADA-ES, Inc. ADA-ES is a publicly-traded company (NASDAQ: ADES).

c. Are the owners financially backed by others?

RREP will be financed with a combination of debt and equity. The exact configuration of the project financing is being negotiated at the time of submittal of this application.

d. When is closure anticipated?

The planned life and longevity of the facility is a 30-year life. The life of the plant will be evaluated prior to the 30-year point to determine whether operations will continue.

e. Who is responsible for the site after closure?

If the site undergoes closure, the new landowner would be responsible for the site, or RREP would be responsible if it retains ownership.

f. What assurances will there be that the site will be closed in accordance with the plan?

At this time, there are no required closure plans for this type of facility. Any closure activities, therefore, would be in accordance with good business and environmental practices.

g. What financial assurances will be established to demonstrate the ability to handle problems after closure?

Not applicable.

h. Who certifies that the site is properly closed?

Not applicable. However, RREP will be responsible for the property until it is sold, transferred or closed.

i. How are people protected from unwittingly buying land after closure?

The facility is a manufacturing facility for activated carbon and is not a landfill. There are no land deed restrictions requirements.

(1) Is the closed facility recorded in the deed?

Not applicable.

(2) What future uses are possible?

Allowable use of the land will be for industrial use. The planned life and longevity of the facility is a 30-year life. The life of the plant will be evaluated prior to the 30-year point to determine whether operations will continue.

III. Are there alternative projects which would offer more protection to the environment than the proposed facility without unduly curtailing nonenvironmental benefits?

No, this project protects the environment based on its design and proposed operations. The proposed facility has more stringent emissions controls than any operating AC facility. The product is needed because there is not an alternative technology using this raw material available for many of the US coal-fired power plants to reduce mercury emissions. Activated carbon injection for reducing mercury from coal fired power plants is a proven and tested means for the affected utility industry to meet the pending mercury regulations. Current supply of AC is inadequate to meet this demand, and therefore, RREP is proposing this new facility.

A. Why was this technology chosen (e.g., incineration over landfilling?)

Steam activation of coal to produce activated carbon for ACI provides the type of carbon structure with a proven record of mercury control performance.

1. Are other technologies available?

Yes, chemical activation of carbonaceous materials is possible to produce activated carbon, but there are no records of adequate mercury removal performance.

2. Describe the engineering design and operating techniques used to compensate for any site deficiencies.

The site is not deficient.

B. Is the proposed technology an improvement over that presently available?

Yes, we will use high yield multi-hearth furnaces (MHF) for carbon activation and a high energy recovery process design to achieve the maximum amount of activated carbon and waste energy from the facility.

C. Describe the reliability of technology chosen.

1. Past experiences.

MHF furnaces are highly reliable devices with an excellent track record in carbon activation and reactivation. RREP is combining these units with afterburning and a steam turbine generator design resulting in reliable operation and performance.

Facility design features that improve operations reliability:

- The plant is built at the mine mouth to help insure an economic and reliable coal supply.
- A covered (and below grade) supply of coal (i.e., "dead" storage), in addition to the coal storage silos.
- The output for one production line is split between four furnaces, so with one furnace down for inspection or maintenance the plant can still run at about 75% capacity.
- Equipment redundancy is built into coal crushing, product cooling, and product grinding.
- MHFs are designed to allow for adjustments in coal feed, steam, natural gas, and combustion air feed rate as well as activation duration. This allows for multiple process input adjustments for final product quality and capacity.
- Product shipment capability, at a minimum, by either rail or truck is provided.
- The plant is designed to be self-sufficient on steam and electricity. The power block is designed to allow the plant to continue operation even if the utility is unable to purchase the facility power or provide auxiliary power.

2. *Environmental Impacts*

Environmental impacts from the operations of the production facility are discussed in Sections I and IV.

D. Describe the sequence of technology used from arrival of wastes to the end process at the facility (flow chart).

Wastes will not be received by the facility.

1. **Analysis of waste**
2. **Unloading**
3. **Storage**
4. **Treatment**
5. **Monitoring**
6. **Closure**
7. **Post-closure**
8. **Disposal**
9. **Any residuals requiring further handling**

With respect to wastes generated and environmental impacts as a result of facility operations, see Section I.A.2. With respect to issues associated with closure, see Section II.D.4. Below reiterates the description presented in the Project Overview:

The proposed facility's flue gas system will be equipped with modern air pollution control devices to reduce emissions to the atmosphere. A low-NO_x afterburner will reduce oxides of nitrogen (NO_x), volatile organic compound (VOC), and carbon monoxide (CO) emissions. Additionally, flame tempering (e.g., FGR) and selective non-catalytic reduction (SNCR) with aqueous ammonia (19% concentration) as the reagent will be installed to further reduce NO_x emissions. Activated carbon (produced on-site) will be voluntarily injected into the exhaust stream downstream of the waste heat recovery boiler for mercury removal. A Spray Dryer Absorber (SDA) will be installed to control sulfur dioxide (SO_2) and sulfuric acid (H_2SO_4) emissions. Finally, a baghouse will be used for particulate matter (PM) emissions control.

In addition to controlling emissions associated with the process exhaust gas stream, the proposed design also addresses controlling fugitive PM emissions. All conveyors are fully enclosed, with dust collection/dust suppression systems at all transfer points to control fugitive PM emissions from coal and product handling. All roads on-site are paved.

The design is for minimal or zero wastewater discharge, the bulk of the wastewater will be evaporated in the SDA. Solid waste generated by the plant will consist of calcium sulfate/sulfite produced in the SDA and collected in the baghouse along with the ash from the MHF cyclones. The solid waste will be properly landfilled or used as backfill in the coal mine or other beneficial use, subject to appropriate approvals.

E. Will this facility replace an outmoded/worse polluting one?

No. There is not currently the AC capacity to serve the market needs for mercury control by coal-fired power plants. This facility will enable power plants to meet mercury regulations. This facility has the most stringent emissions controls of any AC facility operating in the US.

F. What consumer products are generating the waste to be disposed? Are there alternative products that would entail less hazardous waste generation?

The raw materials and products used at and by the production facility include natural gas, water, coal, lime, treatment chemicals, aqueous ammonia, electricity, diesel fuel, and miscellaneous products (e.g., lube oil, laboratory chemicals, antifreeze, etc.) used for facility operations and maintenance.

Natural gas, a clean-burning fuel, via pipeline quality gas does not generate waste; rather, byproducts (air pollutants) of combustion are produced; these air pollutants are controlled. See Sections I.A and I.G. Water is necessary for various process operations; the current facility design is for minimal or zero wastewater discharge. The bulk of the wastewater is evaporated in the SDA on-site. Small quantities of wastewater will be generated from equipment, cleaning operations, sanitary waste, and certain cleaning and treatment residues. The local water company will supply potable water. There is no alternative to the electricity that will be provided by CLECO; waste is not generated by electricity. Diesel fuel will be used for the emergency fire pump system; low sulfur diesel fuel will be used. There is not an alternative fuel that can be used to ensure reliable operations of the emergency fire pump system's diesel engine.

All other general operations and maintenance products will be purchased and consumed in a manner as to minimize non-hazardous and hazardous waste. Non-hazardous waste will be transported off-site by licensed haulers to off-site recycling or landfill operations in accordance with Federal and State regulations. Small quantities of hazardous waste generated are expected to qualify as either a Conditionally Exempt Small Quality Generator or as a Small Quantity Hazardous Waste Generator. This waste will be transported off-site by licensed haulers to approved landfill operations in accordance with Federal and State regulations.

IV. Are there alternative sites which would offer more protection to the environment than the proposed facility site without unduly curtailing nonenvironmental benefits?

No. There are no alternative sites that would offer more protection to the environment than the proposed facility site without unduly curtailing non-environmental benefits.

A. Why was this site chosen?

The primary driver behind locating the site was proximity to the raw material, lignite coal. Lignite is difficult to transport long distances due to the expense of transporting this low-rank coal, relative to its value, and the need to keep the lignite covered/protected. The quantity of raw material is much greater than the quantity of product by a factor of 4-5. Therefore, minimizing transportation on the raw material side reduces truck traffic and fuel consumption. ADA-ES has demonstrated that lignite coal from the Red River Mine can support manufacturing of an activated carbon that is effective for mercury capture. These clear environmental and economic benefits drove RREP to examine sites adjacent to the Red River Mine. Locating adjacent to an operating mine is appropriate for a manufacturing facility, since mining is of an industrial nature. The proposed site contains no wetlands, so wetland impacts are nonexistent. Several other factors affect site selection priority. The selection criteria included the anticipated receipt of environmental permits, proximity to raw material, minimization of environmental impact, and local and regional benefits. The length of time it will take to obtain the required environmental permits is key because in order to meet market needs in early 2010, construction on the facility needs to begin in early 2008. Additional considerations include the availability of a trained workforce and economic considerations such as the ability to benefit from Federal and State incentive and financing programs.

1. Specific advantages of the site

The specific advantages of the site include being located adjacent to an active, lignite coal mine and existing infrastructure, as well as being reclaimed mine land with no wetlands. The adjacent coal mine will provide the primary feedstock and minimize the transportation of coal. Lignite was chosen because there are more tests on this type of coal for the production of activated carbon. This site provides coal quality that is well-suited for production of the AC product. With respect to other sites adjacent to this coal mine, the particular site proposed is located within the Red River Mine slurry wall, protecting the site from the 100-year flood plain, it is nearby a natural gas pipeline supply, nearby electrical interconnection, and accommodating of transportation modes (i.e., truck, rail and barge) for product delivery.

2. Were other sites considered and rejected?

Yes. Other sites were considered in Texas, Louisiana and North Dakota. The potential Texas sites would not have fulfilled several primary criteria for site selection, such as timely receipt of environmental permits to meet the market demand timing for activated carbon product. In addition complications with proximity to support infrastructure (combination of transportation, electrical interconnect, gas and water availability) did not support further investigation. Two sites in North Dakota are concurrently under consideration.

There were several other sites that were considered in Louisiana adjacent to the coal mine. One site, near the selected site, had many of the same features and environmental setting as the selected site; however, the site was located below the flood plain (outside the slurry wall) and therefore was not a preferred site. Other nearby land parcels that have many of the same features and environmental setting as the selected site, as well as being above the flood plain, were rejected because of the potential timing to secure land ownership. Sites not adjacent to the coal mine, but accessible via truck transportation were also considered, however, they were not considered preferred sites given, at a minimum, the added transportation costs and availability of a site adjacent to a coal mine.

3. Is the location of the site irrevocable; i.e., would denial of permit based on site preclude the project?

Yes. The location of the site is irrevocable such that denial of a permit would preclude the project.

B. Is the chosen site in or near environmentally sensitive areas?

No. The site chosen is not in or near an environmentally sensitive area. The site is within the Red River Mine Permit boundary on approximately 60-acres near Armistead in Red River Parish, Louisiana. The property is located between one-half and one mile west of Armistead, Louisiana on the south side of Parish Road 604, and approximately three miles west of the current Red River channel. ADA-ES' determination of the proximity of environmentally sensitive areas was based on reviewing records regarding the area, conducting a site visit, which included a thorough walk-through of the surrounding areas, and discussing findings with Red River Mine.

1. Wetlands

There are no other wetlands or water bodies on-site. The site is primarily un-vegetated reclaimed mine land. In general, the proposed site is flat and drains from northeast to southwest into a designed drainage feature constructed by Red River Mine. Accumulation of stormwater is in the southwest corner of the site on the east side of the mine road near the property boundary. The drainage occupies less than 1 percent (< 1.0 acres) of the total site.

2. Estuaries

There are no estuaries located in or nearby the site.

3. Critical habitat

There is no critical habitat located in or nearby the site. A pedestrian survey was conducted of the site. The site does not possess habitat that supports the potential for threatened or endangered species. There were no threatened or endangered species observed in the survey area of the proposed site.

4. Historic or culturally significant areas

a. Indian mounds

There are no Indian mounds located in or nearby the site.

b. Antebellum houses

There are no antebellum houses located in or nearby the site.

c. Tourist attractions or facilities (e.g., bed and breakfast inns)

There are no tourist attractions or facilities located in or nearby the site.

d. Campgrounds or parks

There are no campgrounds or parks located in or nearby the site.

C. What is the zoning and existing land use of the prospective site and nearby area?

Red River Mine has owned the site since 1988. The site has been mined. The prospective site for the AC manufacturing facility is on land currently part of Red River Mine's current mining plan. As part of the required local and state review and approval process, this area of land will be removed from the mining plan and transferred to RREP to be used for RREP's AC manufacturing facility operations. Land nearby the site is either reclaimed mine land or agricultural.

There are no buildings or other structures on the site. A maintained mining road borders the northern and western sides of the site. There is little to no vegetation on the land surface. An ExxonMobil crude oil pipeline and a power line run parallel to the western site boundary, outside the site.

The site is bounded to the north by Parish Road 604 and north of the road, by undeveloped land that is used for grazing. Acreage apparently being used for agricultural usage is northeast of the site. A part of the Red River Mine mining area that is also undergoing reclamation abuts the east side of the site. Undeveloped land and active mine areas lie south of the site boundary.

1. Is the site located near existing heavy industrial, chemical process or refinery operations?

Yes. The site is located next to an existing coal mining facility.

2. Is there a precedent for chemical contamination near the site or is the soil and water pristine?

No. There is not a precedent for chemical contamination near the site, soil or nearby water.

3. Is the area particularly noted for its esthetic beauty?

No. The area is not particularly noted for its esthetic beauty.

D. Is the site flood prone?

No, the site is not flood prone.

1. Is the site in a flood plain?

Yes. The property is in the Bayou Pierre and Red River flood plain that has a natural levee along the river, which protected the gently undulating Moreland clay, which is situated between the river and the steep Meth-Ruston soil association along the western edge of the project area. The flood plain soils are predominately poorly drained, nearly level, clay soils with small regions of fine, sandy loam. Prior to mining the flood plain was farmed but since being mapped, the flood plain and immediate project area has been mined and the original soils were removed. The site, however, is located within the Red River Mine slurry wall, which is above the 100-year flood plain.

a. How current are the maps used to make flood plain determinations?

The flood plain determination was based on discussions with the adjacent Red River Mine personnel. The 100-yr flood plain was determined to be 134 feet, based on previous permitting activities conducted by Red River Mine. There are no current maps for the site selected.

b. What is the elevation of the site?

The site is approximately 130 feet above mean sea level. The slurry wall elevation is 134.5 feet above mean sea level. The present variation in land surface elevation is approximately 10 feet over the entire property area based on a site reconnaissance. The planned variation in land surface elevation across the property is 2 feet to 3 feet once land reclamation is completed, with an average elevation of approximately 130 feet.

c. Is diking required or desired to provide flood protection?

No. Diking is neither required nor desired to provide flood protection.

(1) What is the design height of the dike?

Not applicable.

(2) How is the dike protected from erosion?

Not applicable.

(3) What frequency and design storm was used?

Not applicable.

(4) Is the access to the site over or through dikes?

Not applicable.

2. Is the site hurricane vulnerable?

No. The site is not within the recognized hurricane zones.

a. Is the site in an area subject to storm surge?

No. The site is not in an area subject to storm surge.

b. What are the design storm specifications?

See below, item (d) for wind speed. Other design specifications include: ground snow load at 15 pounds per square foot; maximum 24-hour rainfall (50 year storm) of 10 inches; average annual precipitation of 51.5 inches; and normal annual snowfall of 2 inches.

c. Should damage from wave action be considered?

No. The site is not located in a coastal area.

d. For what levels of wind speed is the facility designed?

The facility is designed for a basic wind speed of 90 miles per hour (per IBC 2006), an exposure of C, and an importance factor of 1.0.

E. Is groundwater protected?

Yes. Groundwater is protected. The proposed facility is not expected to have an impact on groundwater resources or quality.

1. Are aquifers or recharge area underlying the site used for drinking water?

The facility is located in area where no aquifers are present below the footprint of the plant and support facilities. A slurry cutoff wall with a permeability of less than 10^{-8} cm/sec separates the nearby aquifer of the Red River alluvium from the reclaimed areas of the mine over which the plant facilities are located. The reclaimed mine overburden consist of intermixed clay, silt and sand with poor hydraulic properties for developing of consumptive use of water. The alluvial aquifer is not used as a source of drinking water in the areas surrounding the plant. The protection of the slurry cutoff wall minimizes any adverse impact on the alluvial aquifer and any possible use of its groundwater, which currently does not exist. The adjacent alluvial aquifer consists of a layer of sand with occasional presence of basal pea-size gravel. The sand stratum lies a depth of 20 to 30 feet below ground and has a consistent thickness of 15 to 25 feet. Occasional thicker pockets of sand reaching up to 35 feet in thickness are found.

2. What is the relationship of the site to the water table?

Prior to mining the water table at the facility site oscillated around elevation 120 feet above *mean sea level or around 10 feet below ground surface.* As part of infiltration the area will develop a new water table over the long term. However, the water levels that develop will be within mixed soils of low hydraulic conductivity as described in the response to Item IV.E.1 (above).

3. What wells exist in the area?

A search of the Louisiana Department of Transportation and Development Registered Water Well database identified numerous water wells located on and immediately adjacent to the site. Well depths range from 42 feet to 63 feet. Most of these water wells extracted water from the Red River aquifer to de-water the site while mining lignite. One of these water wells is an observation well for the U.S. Geological Survey. The reported water level in these wells range from 6.7 feet to 22.2 feet.

4. What is the flow rate and direction of the groundwater flow?

The hydraulic conductivity of the surrounding slurry wall provides an effective barrier for groundwater flow from the reclaimed mine areas to the adjacent alluvial aquifer. The hydraulic conductivity of the reclaimed overburden on the average does not exceed 10^{-5} cm/sec. Any water flow within the mining cell will discharge into pond the mine excavation and be redirected to the mine sedimentation ponds. No measurable flow will go into the alluvial aquifer.

5. What is the groundwater quality in the underlying aquifers?

There are no underlying aquifers in the area where the plant facilities will be constructed as indicated in Item IV.E.1 (above).

6. Is there a hydraulic connection between the aquifers?

As indicated in items IV.E.1 to IV.E.5 (above), there are no aquifers below the plant facility site. A hydraulic barrier has been established between the site and the adjacent alluvial aquifer by a slurry cutoff wall constructed for the purpose of preventing water from the adjacent alluvial aquifer into the mine excavation areas.

F. Does prospective site pose potential health risks as defined by proximity to:

The closest incorporated town is Coushatta, located approximately 2.5 miles east-northeast of the property. The closest public buildings (schools, library, etc.) are located in Coushatta.

1. Prime agricultural area (crop or pasture land)

No. The project site does not pose potential health risks related to agriculture. The project site is on reclaimed land and is surrounded by other mine operations and activities. Pasture land is located across Red River Parish Road 604, North of the site.

2. Residential area

No. The project site does not pose potential health risks to nearby residential areas. The closest community of residences is Armistead, located approximately ½-mile east of the property.

3. Schools or day care centers

No. The project site does not pose potential health risks to nearby schools or day care centers.

4. Hospitals or prisons

No. The project site does not pose potential health risks to hospitals or prisons.

5. Public buildings or entertainment facilities

No. The project site does not pose potential health risks to public buildings or entertainment facilities.

6. Food storage area

No. The project site does not pose potential health risks to food storage areas.

7. Existing community health problems that may be aggravated by operation of additional hazardous waste disposal capacity

Not applicable. The facility itself is not a hazardous waste facility. The facility waste will be properly managed. See Section I.A.

G. Is air quality protected?

Yes. Air quality is protected. Air emissions are minimized with the application of state-of-the art emissions control systems. The proposed facility will be required to apply BACT for certain criteria pollutants and will be subject to and will comply with all applicable Federal and State air

quality regulations. In addition to controlling emissions associated with the process exhaust gas stream, the proposed design also addresses controlling material handling and fugitive PM emissions. All conveyors are fully enclosed, with dust collection/dust suppression systems at all transfer points to control fugitive PM emissions from coal and product handling. All roads on-site are paved. The cooling towers will be equipped with drift eliminators. Furthermore, the facility is voluntarily reducing its own mercury emissions using ADA-ES' mercury control technology. Finally, the product will enable coal-fired power plants to reduce emissions of mercury.

1. Is the site within an ozone or non-attainment area?

No. The site is not located within a non-attainment area for ozone and for other regulated air pollutants.

2. What contaminants are likely to be generated at the site?

The air pollutants that will be generated at the site include criteria pollutants. Criteria pollutants include oxides of nitrogen (NO_x), oxides of sulfur (including SO_2), sulfuric acid (H_2SO_4), carbon monoxide (CO), particulate matter with a diameter of 10 microns or less (PM_{10}), and volatile organic compounds (VOC). Small quantities of hazardous air pollutants and toxic air pollutants, including ammonia, also will be emitted. The summary of the quantities of air emissions is presented in Section 3.0 of the air quality permit application. Short-term and annual emissions are presented in the application in Tables 3.1 and 3.2, respectively.

3. What protection is afforded from each contaminant generated by the site?

The basic goals of the Prevention of Significant Deterioration (PSD) regulations are: (1) to protect the public health and welfare from any adverse effect which might occur even at air pollution levels better than the NAAQS; (2) to preserve, protect, and enhance the air quality in areas of special natural, recreational, scenic, or historic value (such as national parks and wilderness areas); and (3) to ensure that economic growth will occur in harmony with the preservation of existing clean air resources.

RREP's proposed AC manufacturing facility is subject to review under the PSD Program. There are two major components of a PSD permit application: the Best Available Control Technology (BACT) analysis, and an air quality impact analysis. BACT for the process emissions will be achieved through the application of advanced pollution control systems as summarized in Table 1 of the Project Overview. BACT for the material handling operations sources will be achieved through the use of highly efficient dust collectors which will minimize particulate matter emissions. Furthermore, the facility is voluntarily reducing its own mercury emissions using ADA-ES' mercury control technology.

In the air permit application, Section 5.0 discusses RREP's application of BACT in detail. Section 6.0 presents the results of the air quality modeling; the modeling results show that the project impacts are below the Federal National Ambient Air Quality Standards (NAAQS), which serve as the standards to protect public health.

The proposed facility's flue gas system will be equipped with modern air pollution control devices to reduce emissions to the atmosphere. A low-NO_x afterburner will reduce NO_x, VOC, and CO emissions. Additionally, flame tempering (e.g., FGR) and SNCR with aqueous ammonia (19% concentration) as the reagent will be installed to further reduce NO_x emissions. Activated

carbon (produced on-site) will be voluntarily injected into the exhaust stream downstream of the waste heat recovery boiler for mercury removal. A Spray Dryer Absorber (SDA) will be installed to control SO_2 and H_2SO_4 emissions. Finally, a baghouse will be used for PM emissions control.

In addition to controlling emissions associated with the process exhaust gas stream, the proposed design also addresses controlling material handling and fugitive PM emissions. All conveyors are fully enclosed, with dust collection/dust suppression systems at all transfer points to control fugitive PM emissions from coal and product handling. All roads on-site are paved. The cooling towers will be equipped with drift eliminators.

An accidental air release of ammonia from the on-site storage tanks is a potential risk, in the event of tank failure. However this is minimized by utilizing 19% ammonia solution, which is safer than higher concentrations and thus not subject to a risk management plan (RMP), which would address requirements in the event of a release. The use of 19% ammonia solution as well as secondary containment, avoids the potential to endanger public health or the environment.

Under PSD review, the facility must demonstrate that total emissions – emissions from the proposed new emission units plus emissions from existing off-site sources in the surrounding region – neither cause nor contribute to an exceedance of the applicable NAAQS. NAAQS are established to protect human health (primary standards) and welfare (secondary standards) with an ample margin of safety. These standards are updated periodically by the U.S. EPA to account for the latest scientific studies on the effects of criteria pollutants on human health and welfare.

PSD review provides an additional level of protection to the environment by allowing only incremental, tightly regulated increases to ambient pollutant levels in attainment areas. Industrial growth will not be allowed if U.S. EPA-stipulated incremental levels (i.e., PSD increments) of certain criteria pollutants are exceeded.

Red River Parish currently is designated by the U.S. EPA to be in compliance with all NAAQS. Based on the potential maximum emission levels for the proposed facility, the emissions of criteria pollutants – PM_{10}, NO_x, SO_2, CO, ozone (controlled though regulation of VOC), and lead – from the proposed facility have been included in the PSD review.

4. What is the potential for unregulated emissions?

The potential for unregulated emissions is minimal due to the continuous monitoring of air emissions and coal feed system and furnace shutdown in the event that operations of any downstream emissions control system is disrupted. Ammonia emissions were evaluated as part of the States toxic air pollutant requirements; air quality modeled emissions were determined to be below the State's standards. Section 3.0 of the air quality permit application presents a discussion of emissions, including hazardous and toxic air pollutants.

5. What plans are implemented to provide for odor control?

The facility will be operated in a manner such odors would not be detected off-site. It is expected that the types of raw materials, products, and waste materials handled at the facility will have minimal to no odor concerns. Facility operations will be in accordance with State regulations that restrict the discharge of an odorous substance that causes a perceived odor intensity of six or greater on the specified 8-point butanol scale (per LDEQ test method).

6. Who will be affected by emissions?

Potential impacts of air emissions to nearby areas have been determined by air quality modeling. Projected air emissions from the proposed facility will not adversely impact surrounding communities. The Company will design the facility to ensure compliance with the NAAQS. NAAQS are established to ensure the protection of public health and welfare, with an adequate margin of safety. Section 6.0 of the air quality permit application presents a discussion of the potential air quality impacts from the facility.

a. What is the direction of the prevailing winds?

The direction of the prevailing winds is from the southeast.

b. Describe the expected frequency of "bad air" conditions.

The project site is located in an area that is in attainment of the ambient air quality standards. There is no expected frequency of "bad air" conditions.

7. Describe the control of vapors at various stage of process.

Best available control technologies will be used to control air pollutant emissions from the facility. An afterburner will be used to reduce VOC and CO emissions. A spray dryer absorber (SDA) will be used to reduce SO_2 and H_2SO_4 emissions. Baghouses throughout the facility, including on the main stack, will be used to reduce PM/PM_{10} emissions. Low-NO_x burners, flame tempering, and selective non-catalytic reduction will be used to reduce NO_x emissions. AC will be voluntarily injected into the exhaust stream to reduce mercury emissions.

H. Have physical site characteristics been studied; what has been done in terms of a geotechnical investigation?

Yes. The physical site characteristics have been studied as a result of an environmental site assessment, a survey, and a geotechnical investigation. These studies relied upon site visits, historical records review, discussions with property owners, and engineering evaluations. A portion of the site was previously mined and has been reclaimed, and a portion of the site that is virgin soil has not been mined.

1. Site geology

According to information obtained from the Louisiana Geological Survey, the property is located on an outcrop of the Holocene-age Alluvium. The Alluvium is characterized by silt, silty clay and some very fine sand lain down as natural levees. The Alluvium unconformably overlies Pleistocene-age terrace deposits and the Wilcox Group of Paleocene age. The property is presently undergoing mine reclamation and is being backfilled with mine spoils.

2. Hydrology

The property is located within the drainage area of Pierre Bayou. The original drainage pattern of the property has been modified from that shown of the USGS topographic maps by mining and reclamation activities. Surface water flow at the property is presently towards the southwest corner where it enters a culvert that discharges to a drainage ditch that runs parallel to the western boundary of the property. The drainage ditch extends southward and discharges into Pigpen Bayou, a tributary of Pierre Bayou. Pierre Bayou in turn is a tributary of the Red River.

In general, the proposed site is flat and drains from northeast to southwest into a designed drainage feature constructed by Red River Mine. Accumulation of stormwater was observed in the southwest corner of the site on the east side of the mine road near the property boundary. A drainage from north of Parish Road 604 flows through culverts under Parish Road 604 and then flows east through a designed drainage along the south side of 604 until turning south just before the Missouri Pacific Railway. This drainage feature is approximately 20 feet, and it drains through the site for approximately 1,800 linear feet.

3. Topography

The land surface presently slopes towards the southwest corner of the property. The land surface of the property has been modified from that shown on United States Geological Survey (USGS) topographic maps (Harmon and Evelyn 7.5 minute Louisiana Quadrangle) by mining and reclamation activities. The present variation in land surface elevation is approximately 10 feet over the entire property area based on a site reconnaissance. The planned variation in land surface elevation across the property is approximately 2 feet to 3 feet once land reclamation is completed, with an average elevation of approximately 130 feet.

These topographic maps show that the topography of most of the area is level, with streams and bayous flowing to the south. A knoll that rises about 100 feet higher than the property land surface is immediately west of the property. Some wetland and forested areas are indicated on these maps.

4. Soil properties

The Natural Resources Conservation Service (NRCS) web-based soil survey information for Red River Parish indicates the soils mapped within the survey area are Moreland clay, Armistead clay, and Moreland silt loam. These soils are not considered hydric by the NRCS. All soils are commonly found in the UWGCP and are typically associated with land in agricultural production. The soils are predominately poorly drained, nearly level, clay soils with small regions of fine, sandy loam.

The property is located on an outcrop of the Holocene-age Alluvium. The Alluvium is characterized by silt, silty clay and some very fine sand lain down as natural levees. The Alluvium unconformably overlies Pleistocene-age terrace deposits and the Wilcox Group of Paleocene age. The property is presently undergoing mine reclamation and is being backfilled with mine spoils.

5. Aquifer location

The facility is located in an area where no aquifers are present below the footprint of the plant and support facilities. A slurry cutoff wall with a permeability of less than 10^{-8} cm/sec separates the nearby aquifer of the Red River alluvium from the reclaimed areas of the mine over, which the plant facilities are located. The reclaimed mine overburden consist of intermixed clay, silt and sand with poor hydraulic properties for developing of consumptive use of water. The alluvial aquifer is not used as a source of drinking water in the areas surrounding the plant. The protection of the slurry cutoff wall minimizes any adverse impact on the alluvial aquifer and any possible use of its groundwater, which currently does not exist. The adjacent alluvial aquifer consists of a layer of sand with occasional presence of basal pea-size gravel. The sand stratum lies a depth of 20 to 30 feet below ground and has a consistent thickness of 15 to 25 feet. Occasional thicker pockets of sand reaching up to 35 feet in thickness are found.

A search of the Louisiana Department of Transportation and Development Registered Water Well database identified numerous water wells located on and immediately adjacent to the property. Well depths range from 42 feet to 63 feet. Most of these water wells extracted water from the Red River aquifer to de-water the property while mining lignite. One of these water wells is an observation well for the U.S. Geological Survey. The reported water level in these wells range from 6.7 feet to 22.2 feet.

6. Subsidence problems

A site visit indicated no evidence of, or potential for, subsidence problems on the property. However, no subsidence studies in particular have been performed. In any case, subsidence can be adequately controlled through standard foundation design and will not affect the safe operation of the facility.

7. Climatic conditions

Based on climatic data for Shreveport, LA, the mean daily maximum temperature for the region is 76.3 °F and the mean daily minimum temperature is 54.8°F. On average, the maximum temperature for the day will equal or exceed 90°F on 89 days out of the year, mainly in the June through September period. The mean annual wind speed is 8.4 mph, with a mean annual wind direction of 180° (*i.e.*, winds from the south). Additional detail regarding climatology is presented in Section 6.1 of the air quality permit application.

V. **Are there mitigating measures which would offer more protection to the environment than the facility as proposed without unduly curtailing nonenvironmental benefits?**

A. Is this facility part of a master plan to provide waste management? Whose plan?

No. This question is not applicable.

1. **How does it fit into the plan?**
2. **What geographical area is served by the plan?**

B. Does this facility fit into an integrated waste management system? (reduction, recovery, recycling, sales tax, exchange, storage, treatment, disposal).

No. This question is not applicable. The proposed facility will not dispose of wastes on-site.

1. **On-site**
2. **Regional**

C. Can waste be disposed in another fashion (way)?

No. Wastes cannot be disposed of in another fashion. Disposal of wastes are discussed in Section I. Wastes are disposed of in accordance with State and Federal regulations.

1. **Technology limitations**
2. **Cost factors**
3. **Other reasons**

D. What quality assurance control will be utilized to protect the environment?

Section I.A. discusses the handling of wastes from the facility. Additionally, several plans and permits will be in place, thus providing requirements for the proper operations, maintenance, recordkeeping and compliance with environmental regulations and practices. A Spill Prevention Countermeasure and Control Plan will be developed. A Stormwater Pollution Prevention Plan will be developed. Permits will be issued for ensuring compliance with air quality and water quality standards. Finally, there will facility personnel and management responsible for ensuring environmental compliance.

1. Plans for lab work

Lab activities will be minimal and related to ensuring product quality. Qualified professionals will conduct lab activities. Lab wastes will be properly handled and disposed. See Section I.A.

2. How are out-of-spec wastes handled

Not applicable.

3. What happens to rejected wastes

Not applicable.

4. Treatment stabilization

Not applicable.

5. Segregation of noncompatible wastes

Noncompatible wastes will be segregated as required by Federal and State hazardous waste requirements. A facility procedure will be developed for waste segregation.

6. Handling of containerized wastes

Containerized wastes will be properly handled as required by Federal and State hazardous waste requirements. A facility procedure will be developed for the handling of containerized wastes and will include proper storage and labeling.

E. Innovative techniques used to control release of waste or waste constituents into the environment.

Section I.A. discusses how wastes are handled. The design is for minimal to zero wastewater discharge. The bulk of the wastewater is evaporated in the SDA. The majority of the solid waste generated by the facility consists of the calcium sulfate/sulfite resulting from the use of hydrated lime in the SDA to capture SO_2 and H_2SO_4. (The coal fines can be used in the process; little to no solid waste is anticipated from the coal handling systems.)

Nonhazardous solid waste will be generated as a result of by-products from the emissions control system; this waste will include calcium sulfate/sulfite salts, activated carbon, and ash captured by the baghouse. No hazardous waste will be generated as a direct result of the production line operations. Careful use of waste heat energy and proper flue gas emissions control equipment will serve to make the facility environmentally friendly. Excess heat will be used to generate electric power.

The facility will have the most stringent emission controls of any operating activated carbon production facility. The facility is voluntarily reducing its own mercury emissions using ADA-ES' mercury control technology. Air emissions are minimized via application of state-of-the art emissions control systems. These include a low-NO_x afterburner, flame tempering, selective non-catalytic reduction for controlling, activated carbon injection (for mercury capture), and a spray-dryer/fabric filter combination. Emissions controlled include volatile organic compounds, carbon monoxide, acid gases, NO_x, SO_2, particulate matter (both filterable and condensable), opacity and mercury.

1. Surface impoundment

Not applicable.

2. Land application treatment

Not applicable.

3. Landfill (burial)

Not applicable.

4. Incinerator

Not applicable.

5. Container storage

Not applicable.

6. Tanks

Not applicable.